SQL Assignment 1

1. What is a relational database management system (RDBMS)? What are the advantages of a database management system over a file system?

The software used to store, manage, query, and retrieve data stored in a relational database is called a relational database management system (RDBMS). The RDBMS provides an interface between users and applications and the database, as well as administrative functions for managing data storage, access, and performance.

Advantages of Database Management system over a file system

1. Data redundancy and inconsistency
2. Data Sharing
3. Data concurrency
4. Data searching
5. Data Integrity
6. System Crashing
7. Data Security
8. Backup, Interfaces and Easy Maintenance
9. In a database management system, explain the ACID properties.

A – Atomicy – The entire transaction takes place at once or doesn’t happen at all

C – Consistency – The database must be consistent before and after transaction

I – Isolation – Multiple transaction occur independently without interference

D – Durability – The changes of a successful transaction occurs even if the system failure occurs

1. Explain the concept of normalization.

Normalization is the process of organizing data in a database. This includes creating tables and establishing relationships between those tables according to rules designed both to protect the data and to make the database more flexible by eliminating redundancy and inconsistent dependency.

1. Explain the many types of query languages used in relational databases. DQL, DML, DCL, and DDL are some examples.

DQL - DQL statements are used for performing queries on the data within schema objects. The purpose of the DQL Command is to get some schema relation based on the query passed to it.

DML - The SQL commands that deals with the manipulation of data present in the database belong to DML or Data Manipulation Language and this includes most of the SQL statements.

DCL - Data control language (DCL) is used to access the stored data. It is mainly used for revoke and to grant the user the required access to a database. In the database, this language does not have the feature of rollback. It is a part of the structured query language (SQL).

DDL - DDL or Data Definition Language actually consists of the SQL commands that can be used to define the database schema. It simply deals with descriptions of the database schema and is used to create and modify the structure of database objects in the database.

1. What is the difference between the main key and a composite key? Give instances of how primary key and composite are used.

While a primary key and a composite key might do the same things, the primary key will consist of one column, where the composite key will consist of two or more columns.

For Primary Key:

CREATE TABLE Persons (  
    ID int NOT NULL,  
    LastName varchar(255) NOT NULL,  
    FirstName varchar(255),  
    Age int,  
    PRIMARY KEY (ID)  
);

For Composite Key:

CREATE TABLE student

(rollNumber INT,

name VARCHAR(30),

class VARCHAR(30),

section VARCHAR(1),

mobile VARCHAR(10),

PRIMARY KEY (rollNumber, mobile));

1. Create a table with a primary key, a column default value, and a column unique constraint in SQL.

create table student

( rollno int not null,

Name varchar(30),

Class varchar(30),

City varchar(30) default ‘Mumbai’,

Primary key (rollno),

Unique (rollno)

);